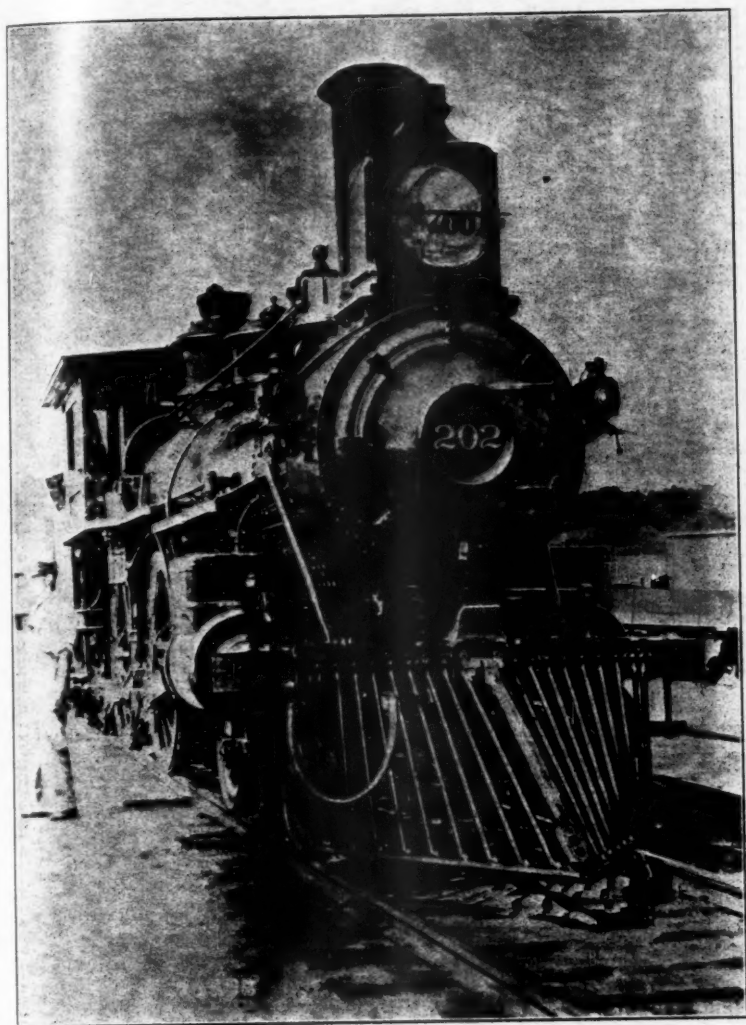


# BULLETIN No. 14



THE RAILWAY AND LOCOMOTIVE  
HISTORICAL SOCIETY





# BULLETIN NO. 14

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The Railway and Locomotive Historical Society  
Boston, Massachusetts  
1927

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6 Orkney Road, Brookline, Mass.

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2700 F. St., Sacramento, Cal.

NORMAN THOMPSON, *Canadian Representative*,  
Box 2004, Winnipeg, Manitoba, Canada.

## The Railway & Locomotive Historical Society.

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COMMITTEE IN CHARGE OF PUBLICATIONS,

CHAS. E. FISHER, *Editor*,  
6 Orkney Road, Brookline, Mass.

HERBERT FISHER, J. W. MERRILL,  
Box 584, Taunton, Mass. 40 Kilby St., Boston, Mass.

C. L. WINEY,  
17 East 42nd St., New York, N. Y.

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Those of us who were fortunate enough to be able to attend the dedication of the new buildings constructed under the George Fisher Baker Foundation for the Graduate School of Business Administration, Harvard University, were impressed not only with the academic procession of notables, the beautiful new Library Building and its companion buildings, but with the work and effort that has been made in acquiring a vast collection of valuable material for the future. The most touching part of the program on that beautiful day of June 4th, 1927, was when Mr. George F. Baker was overcome with emotion in presenting the keys of the buildings to President A. Lawrence Lowell. Our members in this vicinity are urged to visit this library. A morning or afternoon can well be spent in the building and Mr. Eaton, the Librarian, is most agreeable towards all visitors and our own members. Although the room that this Society will occupy is not yet finished and will not be ready probably until next fall, there is an interesting exhibit placed by this Society in the office of the Librarian consisting of early time tables and locomotives that is well worth seeing. Throughout the entire building there is much to interest one that is historically inclined. Repeated visits often yield treasures that were formerly overlooked.

Information relating to "The Fair of the Iron Horse" is already in the hands of our members. This exhibit that will

be staged by the Baltimore & Ohio R. R., Baltimore, Maryland is of vital interest to our members and those of us who can, should attend. The exhibition will be from September 24 to October 8th. Admission will be free. Transportation prior to the day of the Iron Horse will be depicted and there will be many old time locomotives actually under steam. Under the capable direction of Mr. Edward Hungerford, Centenary Director, this exhibition will be the event of a life time. Literature covering this exhibition has been mailed to our members from the Baltimore & Ohio Railroad. This exhibit will be an opportunity of a life time and of interest to every one of our members.

Some of our members may have been a bit puzzled over the appearance of Bulletin No. 13. The issue of this bulletin was in the nature of an experiment. The value of this document will be appreciated by all. Your committee thought it best to issue this bulletin in the same garb that it appeared in 1838 thus enhancing its value to our members. It was first intended to include this work in our regular bulletin. As the result, one extra bulletin will be issued to our members this year and while the committee regrets the delay in the appearance of the first bulletin issued for 1927, our members have benefited by this experiment.

On the subject of bulletins and leaflets, several members have written lately making requests for some of the leaflets issued by this Society a few years ago. A small supply of these was located not long ago and will be furnished to our members free upon application until the supply becomes exhausted. These cover the opening notices of such roads as the Quincy, Boston & Worcester, Boston & Maine, Boston & Providence, Fitchburg and the Connecticut River road, the latter issued in 1927. In addition to the leaflets, the Society will gladly furnish copies of our bulletins to those of our members whose files are incomplete. The price of the reprint of our first two bulletins is \$1.50. All other bulletins can be furnished for \$1.00 per copy. The contents of these bulletins was listed in our 1927 leaflet. Application for these bulletins and leaflets should be made to the President of the Society.

The committee has no objections to accepting material relating to the development of our New England locomotive builders but the apathy of our members in that direction is caus-

ing lack of material. The following account of the Schenectady Locomotive Works appeared in the magazine "Loco" in 1910 and was so good that the committee determined to reproduce it. Cannot some of our New England members be of assistance in this way with our New England locomotive builders?

Our readers may be interested to know that the locomotive on the cover of this bulletin was Old Colony No. 202, formerly the "Henry A. Chase" on the Boston & Providence R. R. and built by the Rhode Island Locomotive Works in 1881.

## Locomotives at Purdue University.

Two more locomotives are of interest at Purdue. B. & O. No. 173 makes an interesting exhibit of one of the famous Camel Back locomotives built by Mr. Ross Winans' at the Mt. Clare Shops in 1868. This engine was in regular service until it was

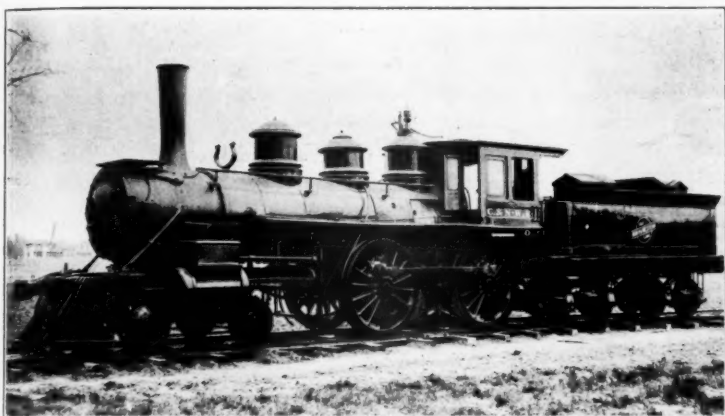


**Baltimore & Ohio No. 173.**

started, under its own steam, on its trip to Lafayette from Baltimore. The engine arrived at Purdue on November 15, 1901, after a five days' trip. At that time there were several other engines similar to this one in service on the B. & O. Of peculiar appearance with the cab perched midway the length of the boiler, it was this appearance like a "hump" that gave these locomotives the name of "Camel Backs". In order to fire the locomotive, it was necessary for the fireman to descend several steps, guarded by a hand rail, in order to reach the coal in the tender. A sort of wooden awning over the tender afforded some protection from the weather.



Chicago & North-Western Ry. locomotive Number 5 was built by the Baldwin Locomotive Works in 1873. This is a typical type of locomotive that for many years did both passenger and freight work on our American roads over fifty years ago.



Chicago & North Western No. 5.

This locomotive was withdrawn from active service and shipped to the University. The attention of our readers is called to the two steam domes on the locomotive, a feature that was followed for several years by the builders.

## Early Scottish Locomotives of the 4-4-0 Design.

By JOHN W. SMITH.

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The development of locomotive types, both in England and in Scotland during the latter half of the 19th century, is a subject of more than passing interest, and well worth a study. More particularly is this so, when the ramifications of the systems, and their traffic, be considered in conjunction with the designs employed. The present short article is intended to deal solely with Scotland, and any reference to England will be in passing only, or for comparison purposes.

So far as the introduction of the 4-4-0 type is concerned in Britain, pride of place must be given to England; but it will be allowed that Scotland employed the type more consistently in the middle of last century than England, as all of the five main lines had locomotives of this wheel nomenclature. Just why this should be so is not easy to conclude, though reasons might be assigned.

The Great North of Scotland Railway, a small line radiating from Aberdeen, employed the 4-4-0 type locomotive from so late back as 1861. It was the first railway in Scotland regularly to use the type, and the second in Britain to employ this wheel arrangement daily on passenger service.

The English North Eastern takes pride of place for the first 4-4-0 tender locomotives. These N.E. engines, from the designs of Mr. William Bouch, were built in 1860 by Messrs. R. Stephenson & Co., of Darlington, and the same firm was responsible for the G.N. of S. Ry. locomotives in the following year. In both cases the designs were developed from the well-known 2-4-0 type—a favourite wheel arrangement, at the period—and it is of historic interest that Messrs. Stephenson, who were so vividly associated with the early railways and their locomotives, should also be in the front rank again, when new and more powerful engines were called for.

Before dealing with the several types in Scotland, it may be remarked that it was not till so late as 1894 that the Great Western Railway used the 4-4-0 tender type, and in 1898 it appeared

on the London and North Western system. Why these relatively great railways were so late in entering the field with the 4-4-0 design is difficult to forecast, except that vested interests and standard fixtures effectively blocked progress in this respect, whereas the smaller lines, less tied down by restrictions were free to take advantage of the latest developments.

Returning now to Scotland, it is proposed here briefly to go over the sizes and particulars of the five 4-4-0 type locomotives employed on Scottish railways, as from 1861, taking them in the order of their constitution, and illustrating them by line drawings, all on the same scale. The occasion will also be fitting to make a few remarks, where needed, as to their work and history.

To-day, by the grouping of the railways, the five systems become two, and no longer are their affairs locally controlled, London being the administrative headquarters for both. Quite by accident, the progressive dates of the railways entering the field with the 4-4-0 type locomotive will also allow of their being tabulated under the new conditions, which list is given by the subjoined table, viz:—

<i>Year.</i>	<i>Railway.</i>	<i>Group.</i>
1861	Great North of Scotland	} London and North Eastern.
1871	North British.	
1873	Glasgow and South Western.	} London, Midland and Scottish.
1873	Highland.	
1877	Caledonian.	



G.N. of S. Ry. 1861.

FIG I.

G. N. OF S. RY., 1861.

Three leading bogie engines were supplied to this line in 1861, and were quite evidently developments of the 2-4-0 type, from the designs of Mr. D. K. Clarke, the Locomotive Superintendent. Others of the class were added a few years later. The

line drawing shows the engines as rebuilt. The writer has no line drawing earlier than that shown, so that it must suffice to illustrate Scotland's first 4-4-0 design. As originally built, no cabs were provided, only the usual weather board. The boilers had upraised fireboxes, on which was placed the dome. Outside cylinders were standard. Alike in general features, these neat engines were continually built up to 1876, when another class of 4-4-0's superseded them.

At the Railway Centenary of 1925, at Darlington, G. N. of S. Ry. locomotive No. 45 and a train of old coaches took part in the procession. It came down from Aberdeen, and went back, under its own power. In 1925 No. 41 had the distinction of being the oldest locomotive at work on the L. & N. E. system, it having been constructed in 1864. The original color of the locomotives was green, relieved by an ample allowance of brass work. In later years this was exchanged for black, and continued so, till the grouping changes again altered matters.



**NBR. 1871**

**FIG 2**

**NORTH BRITISH RY. 1871.**

This railway next entered the field with a 4-4-0 in 1871, from the design of Mr. Wheatley, Locomotive Superintendent, and two were constructed by the Company at the Cowlares Works, Glasgow. They bore the numbers 224 and 264, and were not added to for some years, the following batch of express engines being of the 2-4-0 wheel arrangement.

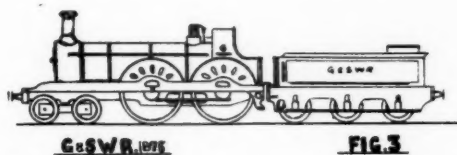
The engines appeared with "stove pipe" chimneys, solid bogie wheels, and open or louvred splashers, while the cab was of a type that offered more protection than was commonly supplied at the period. The tenders had six wheels, grouped closely together.

No. 224 achieved considerable note by becoming involved in the Tay Bridge disaster, of Sunday evening, Dec. 28, 1879. The old bridge was 3,458 yards long, and was provided for a single

track only. A severe gale was blowing at the time, and when the train reached the center of the bridge: it was thought that the added wind resistance it offered, coupled with the lightness of the bridge structure, caused it to give way. The whole train fell, anyhow, into the river, and in all 73 persons were drowned. The first intimation of the accident was given by a signalman seeing the tail lights disappear, and thereafter attempting to ring up the north side box, and failing to get a reply. Officials then proceeded along the bridge, only to find the worst confirmed, and a yawning gap left to mark the place of destruction.

The writer's grandfather, who was a watchmaker, had frequent business with a traveller who missed that train at Edinburgh on the night in question, with how glad a result to himself may be better imagined than described. The piles of the old piers may yet be seen at low water to the east of the new bridge.

No. 224 was raised from the bed of the Tay, and sent to Cowlares and rebuilt. It afterwards was again reconstructed as a compound on the Nesbit System, but was a failure, and again went through the shops. It finally emerged with Holmes' Standard fittings, and finished its days on the not inconsiderable branch lines of the N. B. system in the "Kingdom of Fife".



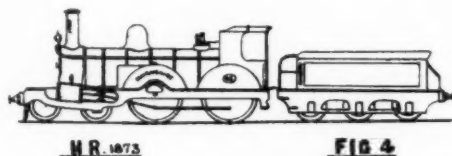
GLASGOW AND SOUTH WESTERN RY., 1873.

All the former 4-4-0 locomotives in Scotland were small and confined to few in numbers. But between 1873-1877 the Glasgow and South Western system, through their engineer Mr. James Stirling, had constructed no less than 22 locomotives at the Kilmarnock works of the railway for express traffic. They marked a real advance at the time, and were among the most powerful in the country.

The influence of the Stirling brothers was very marked on British railways, as both the Great Northern and the South Eastern had designs of their creation at work latterly.

The G. and S. W. engines had steam reversing gear, which made handling easy, and domeless boilers, which were always a strong feature of Stirling design. They may well take their place as the first inside cylinder locomotives for express working of the 4-4-0 type, as in comparison with the N. B. locomotives they were larger and much in advance. They had a pleasant appearance, with round top cab and open splashers, and performed good work on the heavy main line between Glasgow and Carlisle, in conjunction with the Midland Company's trains from London. How 7 ft. 1 in. wheels got over the hilly route to the south leaves one to wonder, as a smaller wheel would seem to be more in keeping with the grades. Nevertheless, the light trains of the period were efficiently handled.

In 1919 the 16 engines of the class that remained were renumbered, many having been already rebuilt, and a few scrapped. Some later had domed boilers. They may frequently be seen yet in and around St. Enoch Station, Glasgow, on milk traffic; which the L. M. S. Company handle in large bulk from the Ayrshire country districts, so that their day of service is not over yet.



HIGHLAND RAILWAY, 1873.

In the same year as the G. & S. W. Ry., introduced a 4-4-0 locomotive, the Highland Railway had one of their 2-4-0 type of engine converted, as a precursor to others designed as 4-4-0's throughout.

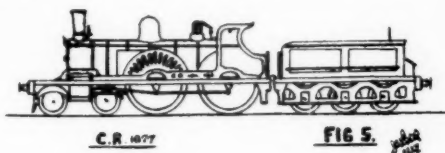
Mr. David Jones, the locomotive superintendent, a strong supporter of outside cylinders, and one who latterly took the lead in introducing the 4-6-0 in Britain, modified locomotive No. 10, which had been built in 1858 by Hawthorn's, of Leith.

The first 4-4-0 proper was introduced in 1874, there being a class of 10 engines, Nos. 60-69, from the Glasgow firm of Messrs. Dubs & Co.

A long and successful line of 4-4-0's subsequently made

their appearance on the Highland system, which being mostly single and heavily graded, was a difficult line to operate successfully. Most of the earlier H. R. locomotives had small wheels—a good point—curious square cabs, outside cylinders, and a system of louvres or air shutters on the front of the funnel.

In the fall of 1923, soon after the grouping of the railways, several old "Strath" class H. R. locomotives were sent down to Glasgow to be scrapped. The writer was able to examine and go on the footplate of one, No. 90, "Grandtully", a 4-4-0, a representative of the last class of engines designed by Mr. David Jones. It is to be regretted that some of these old relics cannot be preserved, to mark the passage of progress in travel from one age to another.



CALEDONIAN RAILWAY, 1877.

The Caledonian was the last Scottish railway to embrace the eight-wheeled locomotive, Mr. B. Connor being credited with the design that emerged from the works of Messrs. Neilson & Co., Glasgow, for that Company.

It is generally allowed that the private builders had a pretty free hand in the design, which was certainly Caledonian in character and outside appearance, though, perhaps, a point of little importance.

Mr. Connor preferred outside cylinders, and was a believer in large driving wheels. As the size was 7 ft. 2 in. that was placed under his 4-4-0 design, they were the largest in Scotland, common to the class of engine. But by no means the largest, wheel for wheel, as the famous 2-4-0 8 footers had already established a good name for speed and service.

The engines suffered from small boilers, and were never so effective as the locomotives they were designed to supplant. In later years, under Mr. Drummond, they received larger boilers, and thus were more capable of accomplishing good service.

They seem to have done useful work on the C. R. trains be-

tween Glasgow and Dundee, until the loads exceeded their capacity, and their last sphere of service was on the Ardrossan line to the Clyde Coast, and working the Arran steamer trains to and from Glasgow. This line was opened in 1891, and at once formed a competitive route for the Arran traffic, via Ardrossan, with the G. & S. W. system. Furthermore, the provision of a fast steamer gave the C. R. the lion's share.

The G. & S. W. were not to be beaten, however, and ordered the splendid vessel "Glen Sannox", a 19 Knot paddle steamer from "Thompson's", Clydebank, now John Brown & Co. Feeling ran high, and the passengers obtained the benefits of a most expeditious service, for a year or so, till a day of reckoning came. The competition ceased, a truce was called, and a working agreement fixed up. It remained till the grouping. Now, as all routes are L. M. S., the luckless passenger may have to take what is given. But we hope and are persuaded better things of the L. M. S.

But to return, the day of these old 4-4-0's was after this display of speed and hustle, and it was well, for the line is heavily graded, and 7 ft. 2 in. wheels ill suited for such a route.

In the spring of 1924, the writer saw a number of old C. R. locomotives in a siding, awaiting the scrap yard, at Scotstown, near Glasgow, and investigation revealed the fact of an old Connor 4-4-0 on its last journey. The engine was minus its motion, and bore signs of evident disuse and exposure to wind and rain. Furthermore, it had a Drummond chimney, and fittings, but the old cab and splashers were unmistakable, however else disguised.

The full line drawing of this class gives a good idea of their general appearance, after fitting with large boilers, and when working on the Dundee service, before referred to in this article.

The color of all C. R. locomotives was blue, and they were always kept in a good state of preserve, when in service.

The list given shows in a collective form the principal dimensions of all the locomotives illustrated, and is more handy for reference thus, than in the letterpress. The study of the rise and progress of a railway locomotive type is a worth while business, and it will be agreed that so far as Scotland goes, her contribution to the type in Britain was of more than passing interest.



# LIST OF DIMENSIONS.

Year.	Railway.	Cyls.	Drivers.	Bogie.	Heating Surface.	Steam Pressure.	Weight (Engine. only.)
		Ins.	Ft. Ins.	Ft. Ins.	Sq. Ft.	Lbs.	Tons.
1861.	G. N. of S. (A )	16x22	5. 0 1/2	3. 0.	898.	130.	—
1871.	N. B. (B )	17x24	6. 6.	3. 3.	1059.	130.	36.
1873.	G. & S. W. (B )	18x26	7. 1.	3. 7.	1111.	140.	39.
1873.	High. (A/1)	18x24	6. 3.	3. 9.	1228.	140.	42.
1877.	Cal. (A/2)	18x24	7. 2.	3. 6.	987.	130.	42.

NOTES: (A )—outside cylinders.

(B )—inside cylinders.

(A/1)—Dimensions of first 4-4-0 design, not No. 10, 2-4-0, as altered.

(A/2)—Line drawing—original locomotive.  
Large sketch first rebuild.

## The Grand Trunk Railway of Canada.

By CHAS. S. GIVEN.

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The credit of conceiving and building a railroad connecting Portland, Maine with Montreal, P. Q., belongs to the late John Alfred Poor, later nationally known for his railroad enterprises.

Mr. Poor had been for some years studying the subject of future railways in Maine. His aim was to construct a system between Maine and Canada. Thoroughly acquainted with its physical geography, the commercial, agricultural and manufacturing capacities of the State, he had a grasp of the entire subject superior to that of any other citizen. In the fall of 1844, his plans made, he bravely entered upon the execution of his design to connect Portland and Montreal by an international railway, the first ever projected on this continent. Mr. Poor had covered much of the route between the two cities on foot. The cost of this route, more than 250 miles, was estimated at ten millions of dollars. Those of us acquainted with this wild country can realize the magnitude of this task.

Meantime other parties were working for a line between Boston and Montreal and much pressure was brought to bear in favor of this route. It was finally decided in this fashion: Two steamers would leave England at the same time, one for Portland the other for Boston. The mails would be transferred at these ports and rushed overland. The route making the best time by delivering the mail first would be selected.

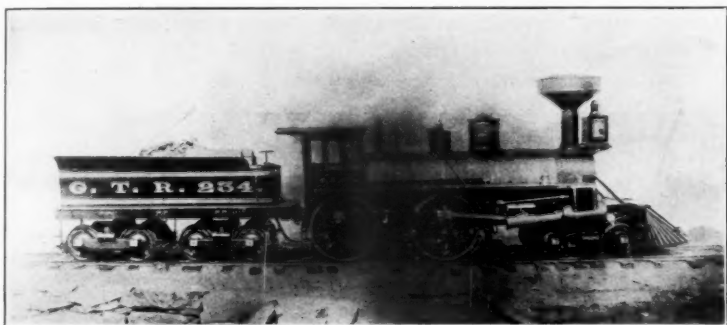
At Portland, with his horses harnessed, awaited Orin Hobbs. Receiving the mail from a tug at India Wharf he sped to Gray and by means of frequent relays of horses rode through to Island Pond. Here another rider took the mail to Longuil, Canada. At this point Mr. G. G. Waterhouse took the mail, crossed the St. Lawrence River on the ice, delivered the mail in Montreal four hours before the Boston mail was received. This won the building of the railroad from Portland to Montreal.

The part of the road between Portland and Island Pond was

to be known as the Atlantic & St. Lawrence Ry. The section between Island Pond and Montreal was to be known as the St. Lawrence & Atlantic Ry. Construction was to begin at Portland and Montreal and work towards Island Pond. The building of the road was approved by the Maine Legislature on February 16, 1845.

The first officers of the company were Mr. Josiah H. Little of Auburn, President; Mr. Solomon T. Corser, Superintendent; Mr. W. S. Eaton, Freight Agent; Mr. Charles E. Barrett, Treasurer; with Messrs. St. John Smith, William P. Preble, John B. Brown and Ezia F. Beals, Directors.

On the Fourth day of July, 1847, ground was broken at Fish Point, Portland, for the Atlantic & St. Lawrence Railway. It



**Grand Trunk No. 234.** Supposed to be a rebuilt Portland Co. locomotive.

was a gala day in Portland and there was a great celebration. The breaking of ground was an elaborate ceremony. This was performed by Mr. W. P. Preble and Governor A. K. Paris. The tools were a silver plated shovel and a wheelbarrow. Mr. Preble did the shoveling and the Governor wheeled a load of dirt. This was dumped as the beginning of the Atlantic & St. Lawrence Railway. The actual construction began at the foot of India Street, where at high tide the water came in sufficient volume to enable boats to navigate over the spot.

From that time on construction was pushed. On March 9th, 1851 the Bridge at South Paris was completed and over it that day passed the first train through to Bethel. The road reached Gorham on July 4th, 1852 and Island Pond in the fol-

lowing April. The entire road was opened between Portland and Montreal on July 18th, 1853. The road was built broad gauge, five feet six inches, later changed to standard gauge on April 25th, 1874. On April 5th, 1854, both roads were leased to the Grand Trunk Railway of Canada and operated by this company until the latter part of January, 1923, when they were taken over by the Canadian National Railway.

The Portland & Kennebec R. R. had trackage rights over the Atlantic & St. Lawrence Ry. between Portland and Yarmouth Jet. When the former road built their extension to Westbrook Jet. in 1850 these trackage rights were given up. The Androscoggin & Kennebec R. R., which later became a part of the Maine Central R. R., had trackage rights over the Atlantic & St. Lawrence R. R. between Danville Jet. and Portland from 1849 until they built their own line between Danville and Cumberland Jet. which was completed Nov. 13th, 1872.

The early locomotives of the Atlantic & St. Lawrence Ry. were as follows:

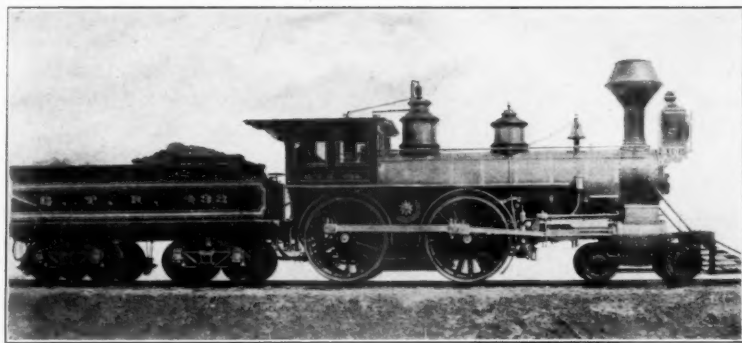
1. "Montreal", Portland Co. 1848, 15x22" 60".
2. "Machigonne", Portland Co. 1848, 15x22" 60".
3. "Oxford", Portland Co. 1849, 15x22" 60".
4. "W. P. Preble", Portland Co. 1849, 14x20" 60".
5. "Waterville", Portland Co. 1849, 15x20" 66".
6. "Coos", Portland Co. 1850, 15x20" 66".
7. "Felton", Portland Co. 1851, 15x20" 60".
8. "Railway King", Portland Co. 1851, 17x22" 54".
9. "Casco", Portland Co. 1851, 14x20" 60".
10. "Forest City", Portland Co. 1852, 15x20" 66".
11. "Danville", Portland Co. 1852, 13x20" 60".
12. "Falmouth", Portland Co. 1852, 14x22" 60".
13. "Daniel Webster", Portland Co. 1852, 15x20" 60".
14. "Cumberland", Portland Co. 1853, 16x22" 60".
15. "Nulhegan", Portland Co. 1853, 14x22" 66".
16. "Paris", Portland Co. 1853, 15x22" 72".
17. "Norway", Portland Co. 1853, 16x22" 60".
18. "Yarmouth", Portland Co. 1853, 15x22" 60".
19. "Ammonusc", Portland Co. 1853, 15x22" 66".
20. "Gloucester", Portland Co. 1853, 15x22" 66".
21. "Vermont", Portland Co. 1853, 16x22" 60".
22. "Gorham", Portland Co. 1853, 14x22" 72".
23. "J. L. Little", Portland Co. 1853, 15x22" 66".

The above locomotives were all inside connected except the "Cumberland", "Vermont", and "Gorham".

Examination of the records of the Portland Co. shows the following engines built for the St. Lawrence & Atlantic Ry.

"A. N. Morin", Portland Co. 1848, 15x22" 60".  
 "Montreal", Portland Co. 1850, 15x22" 66".  
 "Sherbrook", Portland Co. 1850, 16x22" 66".  
 "St. Lawrence", Portland Co. 1851, 15x22" 66".  
 "Richlieu", Portland Co. 1851, 16x22" 66".  
 "Yamaska", Portland Co. 1851, 15x22" 60".  
 "Queen", Portland Co. 1852, 16x22" 66".  
 "Mascawippi", Portland Co. 1852, 16x24" 54".  
 "Berlin", Portland Co. 1854, 14x20" 66".  
 No. 26, Portland Co. 1854, 14x20" 66".  
 "St. John Smith", Portland Co. 1854, 14x22" 72".  
 "Stratford", Portland Co. 1854, 14x22" 72".  
 "Bethel", Portland Co. 1854, 15x22" 60".

The records of the Amoskeag Co. show they built seven locomotives in 1852 for the St. Lawrence & Atlantic Ry., but the names of these locomotives are not mentioned. In 1852, Mr. Holmes Hinkley, of Boston, built the "Magog" and "St. Francis" for the St. Lawrence & Atlantic Ry. Upon the consolidation of these roads with the Grand Trunk Ry., the Portland Co. continued to furnish locomotives and the records show they built one hundred and fifteen locomotives for the Grand Trunk Ry.



**Grand Trunk Ry. No. 432, Portland Co., April, 1875.**

All these early locomotives were wood burners and so far as can be learned, not one remained in service after 1885. These were replaced by new locomotives bearing the same numbers as those scrapped.

As I ran on the Grand Trunk during 1885 I was familiar with all their engines on the two engine divisions between Portland and Island Pond. All were Portland Co. except Nos. 304,

305, 306, 307 and 308. These five engines were Baldwin locomotives and all were eight wheelers. The engines numbered four hundred were on the Portland end together with some three hundreds in freight service. The highest number was 432. Nos. 304, 305, 306 and 432 hauled the through passenger trains however.

All engine and freight crews ran from Portland to Gorham, crews between Gorham and Island Pond doubled the road. Passenger train men ran from Portland to Island Pond and Island Pond to Montreal. From Island Pond to Montreal there were two engine divisions, Island Pond to Richmond and Richmond to Montreal.

The running rules were quite different from any other railroad I ever worked on. In New Hampshire and Vermont the highway crossing whistle signal was two long and two short blasts, while in Maine it was one long and two short blasts. Freight trains were given right of way in practice, though not by rule. A through passenger train would be frequently sidetracked to let two, three or four sections of freight trains run against them. A freight train carrying a red flag stopped all traffic in the opposite direction until the following section arrived. If the second section also carried a red flag that tied up all trains until finally a section came along that did not carry a red flag. It was not unusual for a passenger train to be delayed an hour until six sections of a freight train had passed. Boat freight was considered more important than passenger traffic.

G. G. Waterhouse, the man who delivered the mail first in Montreal was conductor of the passenger train that opened the road to Bethel. Other early conductors were Thomas O. Gould, Orin Hobbs, Thomas Chamberlin, John J. Gerrish, and many others. Some had nicknames like "Jolly" David Pratt, "Kicker" Polly Hodgkins, and "Deacon" Charles Woodman. "Kicker" was always fighting with the station agents. "Jolly" would always keep his passengers in good humor with an announcement like this, "Ladies and Gentlemen, this is Lewiston Junction, not Danville Junction. Watch where you go!"

The road was very smooth and easy riding but the passenger cars were all very old and out of date. As it was primarily a freight road no bid was made for passenger traffic in those

days. A through passenger train each way a day consisting of an express, baggage, combination mail and smoker, two coaches and a parlor car, was the average train. A mixed train each way between Portland and Gorham and three local passenger trains each way between Portland and Lewiston was the extent of the passenger service. The freight traffic was very heavy. Of late years modern coaches have been furnished this end of the road and a bid made for passenger traffic.

## Old Michigan Central R. R. Engine in Service.

A recent letter from one of our members who wishes his name withheld contained an interesting print of Michigan Central No. 8131 with information relating to these tenwheelers as follows:

"In the year 1887, the Schenectady Locomotive Works designed and built for the Michigan Central R. R. a class of 4-6-0 engines which were notable in their day and rather widely known by reason of their prominence in the Company's advertising, particularly as it related to Niagara Falls. These engines were intended for either heavy passenger or fast freight traffic, though they will be remembered chiefly for their work on through passenger runs.



Michigan Central No. 8131.

"Their cylinders were 19x24 inches, drivers 68 inches in diameter, and weight, exclusive of tender, 118000 lbs. The boiler, which was the old-style wagon-top type, was 58 inches in diameter at the front end, and carried a working pressure of 160 lbs. per square inch. The firebox, which rested on top of the frames, burned soft coal. The boiler mountings were of the usual Schenectady pattern of the period, the bell being located between the sand-box and the dome, and the stack being of the customary "cap" style.



"As an example of what they could do, it may be mentioned that they handled the Pacific Express, consisting of baggage car, two coaches, five sleepers and a dining car—nine cars in all. Another train which, if I am not mistaken, was known as the North Shore Limited, was handled by these engines regularly. This was a Wagner outfit of about six cars, including combination baggage and cafe, sleepers and diner. They did not run observation cars in those days.

"Then, as now, the Canada Southern Division was the scene of some rather fancy running. The ten-wheelers referred to certainly did their share toward building up a reputation which has since proved of considerable value to the road. Careful researchers would, doubtless, find much of interest in whatever records of this running are still available. Due allowance for the size of the engines would, of course, have to be made.

"In 1889, the Schenectady Works designed and built for the road a cross-compound ten wheeler. The high pressure cylinder was 20 inches in diameter and the low pressure cylinder was 29 inches in diameter, the stroke of both being 24 inches. The drivers were 68 inches in diameter, and the weight of engine, without tender, 127000 lbs. The boiler, as before, was 58 inches in diameter, but it carried 180 lbs. of steam per square inch. Fuel, soft coal.

"This engine was generally similar to the class already described, except that the bell was located between the stack and sand-box. In due course, the compound features were removed, and replaced by single-expansion cylinders of the ordinary type.

"Recently, I had the good fortune to obtain a photograph of an engine of this class, of which there are less than half a dozen survivors. It is rather unusual to find an engine approximately forty years old on an American railroad, so this picture may be of interest. The boiler and its mountings, frames, cylinders, guides, cross-heads, and drivers are the same as in the old days. A small electric headlight has replaced the square-case oil lamp, a tapered stack takes the place of the pretty "cap", the cab had received some changes and the pilot is different from the original one. The point is, however, that the really important parts of the engine are the same as ever.

"I rode behind this class many years ago, and their passing will seem like the loss of a friend."

## History of Schenectady Locomotive Works.\*

By HAWLEY B. VAN VECHTEN.

Schenectady, as a pathfinder of mechanical progress, has hardly been equalled by any other city in America. The mere mention of its name brings to mind a chain of great historical, mechanical and scientific achievements that are almost without parallel in human history. Foremost in its list of achievements is that of locomotive building. Americans are not, as is commonly supposed, indebted to the English for locomotion. Railroads and locomotive building in this country would not have been greatly delayed if Watt and Stevenson had never lived. Indeed, little was known in this country in the early days of locomotive construction concerning what Europeans had done in that line.

Americans, already celebrated for self reliance in many great endeavors, were obliged to fall back on their own resources and proceed to build railroads and locomotives which were purely original productions of native talent. It is worthy of note that in 1838, only eight years after the first locomotive was turned out of an American shop, 345 locomotives were in use on fifty-six different roads, and only seventy-four of these were built abroad.

### FORMATION OF THE SCHENECTADY WORKS.

In January, 1848, a meeting of enterprising citizens of Schenectady, composed mostly of what was known as the "Mohawk Dutch," assembled for the purpose of forming a locomotive company. The meeting was held in a hall on the third floor of a brick building adjacent to and east of the County Court House on Union street. The hall, which is still standing, was the only one in the city at that time, and was familiarly known as "Tammany Hall." Various citizens subscribed amounts ranging from fifty dollars to \$3,000. Many and varied were the proposals and words of advice delivered at this meeting. One skeptical old "wiseacre," wearing large octagon

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\*From "Loco" 1910.

spectacles and a brass chain, which held his coat together, attempted to dampen the ardor of his more enthusiastic neighbors by raising the query, "What will you do with your locomotives after you have built them? When the roads entering Schenectady are all supplied where will you dispose of any more engines?" Better counsels prevailed, however, and another infant industry, known as the Schenectady Locomotive Engine Manufactory, was born.

#### NORRIS BROTHERS IN CONTROL.

The Norris Brothers, of Philadelphia, who already had an eminent reputation as locomotive builders, having built an engine in Philadelphia as early as 1831, were engaged to manage the business. An old document submitted to the stockholders of the company by William Norris, and dated July 20, 1848, states the various amounts of money to be expended for the construction and equipment of the plant. This paper, which is honored by a frame, hangs on the wall of one of the offices of the Schenectady works of the company. The stockholders, who were all citizens of Schenectady, were to contribute an amount not to exceed \$40,000, \$20,000 of which was for buildings, \$17,000 for tools and \$1,000 for "ground." The tools and machinery to the value of \$10,576 were to be furnished by Edward S. Norris. A note at the bottom of the paper over the signatures of Simon C. Groat and Daniel D. Campbell, secretary and president respectively, called on the subscribers to furnish at stated times money in payment for stock. This was to be paid in several installments of fifteen per cent. and twenty per cent.

The Norris Brothers planned to run the Schenectady shops as a branch of their business in Philadelphia. They agreed to pay to the Schenectady stockholders the interest on the capital invested, annually; also to pay back to the stockholders the whole capital in eight years, and in that way become the sole owners of the works themselves.

Edward S. Norris, aided by his brother Septimus, managed affairs at Schenectady, and built the first locomotive of the company. The initial enterprise was carried on for about one year, but the affairs of the company turned out so badly that the Norrises were obliged to abandon the works. The shops remained

idle for a year, during which time a part of the personal property was sold by the sheriff for taxes.

The failure of the Norrises was largely attributed to the unachieved hopes that they had vested in their famous engine the "Lightning." This engine was built for the Schenectady and Utica railroad in 1849. As its name implies it was intended to develop great speed and to revolutionize locomotion. The "Lightning" was run for about a year between Schenectady and Utica. It made fairly good time, but lacked the desired amount of tractive power. The boiler capacity was not great enough to supply the requisite amount of steam. For these, and other reasons, the "Lightning" was finally pronounced a failure by locomotive engineers of that day. It must be remembered that



Passenger Engine built for the Utica & Schenectady R. R. in 1853.

locomotive construction at that time had not reached the scientific stage, and not having the benefit of the experiences of others, builders, as it were, "groped in the dark." Nearly every engine was an experiment, it frequently being built without any exact idea in the minds of the designers as to how it was to be finished.

#### THE "LIGHTNING" AND D. & H. ENGINES COMPARED.

It may be interesting here to compare the "Lightning" with the mammoth Mallet compound type of engine which has just been built for the Delaware and Hudson Railroad. The contrast, is strikingly apparent. The "Lightning" possessed a

single pair of driving wheels seven feet in diameter while the D. & H. engine is equipped with eight pairs of drivers whose diameters are four and one-fourth feet. The cylinder dimensions of the "Lightning" were sixteen inches in diameter and thirty-two inch stroke. The D. & H. cylinders are forty-one inch and twenty-six inch diameter with a twenty-eight inch stroke. The forty-two inch boiler of the old engine contained one hundred sixteen two-inch tubes, ten feet three inches long, which provided six hundred seventy square feet of heating surface. In contrast with this, the ninety-inch boiler of the modern engine contains four hundred forty-six tubes two and one-fourth-inch diameter, twenty-four feet in length, providing a heating surface of 6,276 square feet; the total heating surface of the engine being 6,629 square feet. If in service to-day, the "Lightning" could haul nine fifty-ton steel coal cars loaded, while the D. & H. engine could haul a train of one hundred thirty-nine such cars; the tractive power being 6,850 pounds and 105,000 pounds respectively. The length over all of the D. & H. engine and tender is ninety feet six inches, as compared with twenty-nine feet, the length of the "Lightning."

#### JOHN ELLIS.

The little locomotive plant lay idle for about a year when the company was reorganized on June 14, 1851, and came under the ownership and control of John Ellis, Daniel D. Campbell, Simon C. Groat and Sebastian Bradt. These gentlemen bought up the small holdings of those at first interested, for a little more than half their original valuation, and capitalized the new company at \$60,000. The concern was given a new name—The Schenectady Locomotive Works—which it subsequently held until the time of the merger with the American Locomotive Company. Through the instrumentality of John Ellis, Walter McQueen, a famous mechanic, was induced to come to Schenectady in April, 1852, to act as master mechanic of the works, a fact which was to preclude any further possibility of failure, as in the case of the Norrises and the "Lightning."

If, as Carlyle says, "The history of the world is the biography of its great men," then it is no less true that the history of the Schenectady Locomotive Works is practically identi-

cal with the biographies of such men as John Ellis, Walter McQueen and A. J. Pitkin. Indeed, to attempt to write a history of this plant without mentioning these men would be as futile and absurd as to attempt a similar feat in regard to our country and leave out the names of Washington and Lincoln.

John Ellis was by far the most conspicuous personage ever connected with the works. He was the first president of the company after its reorganization. It was largely due to his keen foresight and shrewd business ability that the Schenectady works was put on a secure financial foundation. Mr. Ellis was a native of Scotland and possessed a goodly amount of Scotch grit, temper and courage. He had no school education, but had succeeded in several business ventures before locating at Schenectady, which gave him the necessary confidence and "where-withal" to successfully carry out this new enterprise. One legend has it that he borrowed \$3,000 in order to take a subcontract on the Croton water works for New York city. In this deal he is said to have cleared \$10,000 where others had failed. He is also reputed to have performed a similar exploit in building a section of the Boston and Albany railroad. He carried on his work while the company was financially embarrassed, and trusted to the future for remuneration. His reward finally came in ample amount.

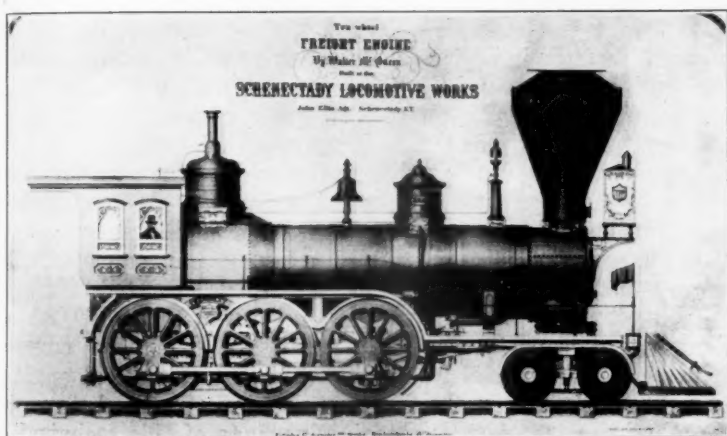
The Scotch temperament of Ellis caused him to frequently come into serious conflicts with his associates, and affairs at last came to a climax. His partners demanded that he must either "give or take," and asked him to name the price at which he would sell and they would do likewise. Their price was so high that they thought he would be compelled to sell. He asked that they give him a short time in which to decide, and in the interim he went to the Mohawk Bank to make the necessary financial arrangements. In an hour or two he came back, and with his Scottish accent surprisingly informed his partners that he would "tak it." It is said that this event occurred during the business depression of '57 and '58, but nothing seemed to daunt John Ellis when he had decided to pursue a certain policy. The incident serves to more clearly exhibit his strong personality as a man among men.

It is thought that Ellis paid his partners \$60,000, thereby becoming, for a time, sole owner of the works. Later a dispute

arose between Ellis and Walter McQueen; both being Scotch they were apparently irreconcilable. Mr. McQueen left the works, and for a time Ellis ruled supreme. But Ellis soon realized that he could not dispense with the services of such a master mechanic as McQueen, and he gave Mr. McQueen one-eighth of the capital stock of the company as an inducement to "come back into the fold."

#### EARLY BUILDINGS.

The first buildings were located where the present machine shop stands. This was on Fonda street, or what is now North Jay. While the buildings were being constructed the business of the company was carried on in a building on the corner of Warren and Jay streets. Most of the work of locomotive build-



Early ten wheel freight engine built by the Schenectady Wks.

ing in the early days was done in the main building which was about 400 feet long and sixty feet wide. This contained a machine shop, erecting shop and engine room on the first floor. On the second floor was a machine shop for light work. The north end of the main building consisted of a boiler shop and blacksmith shop. The offices occupied a small two-story brick building which stood a little to the south of the erecting and machine shops, on the site of the present offices of the works. At a short



distance to the east of the main building was located an iron foundry. Adjoining the foundry on the south was a carpenter shop over which was a pattern shop. A small brass foundry together with a paint shop completed the list of buildings as originally constructed.

Between the erecting shop and the office stood a small shed which was later used as a shelter for John Ellis' horse. Cows belonging to the Ellis family and their neighbors were pastured where the electric locomotive and truck shop now stands. Part of the pasture contained what was believed to be an unhealthy swamp. Later, when the buildings were built near the swamp, it was feared by many well-meaning people that the workmen would be attacked by fever.

On the night of June 26, 1866, a fire broke out near the north end of the second floor of the machine shop, and, being fanned by a strong north wind, quickly swept southward, consuming most of the main building. A thick brick wall between the boiler and engine rooms saved the north end of the shop. The building was soon rebuilt by Mr. John McEnerow, a prominent Schenectady contractor at that time. When rebuilt it was considerably enlarged by being made wider and extending the erecting shop a few feet farther south. About this time the blacksmith shop was rebuilt, and a new boiler shop and roundhouse were constructed near the paint shop. Other minor changes were made, as shown by a more recent lay out of the works, dated 1879.

The loss to the company by the fire was about \$60,000, although the property was fully insured. The policy covered "finished engines in the roundhouse," and as several engines were unluckily left in the erecting shop on the day before the fire, the insurance company took advantage of this technicality and thus saved a handsome sum.

#### ENLARGEMENT OF THE WORKS.

It was not until the latter part of the 80's that there was any appreciable growth in the size of the plant. Since that time so rapid and radical have been the changes that every building that was standing thirty years ago has either been rebuilt or torn down, with the single exception of the easterly portion of the main office building.



Romeyn street, which was the southern end of an old plank toll road running from Union street to Saratoga, has long since been closed, owing to the enlargement of the plant. In return for the right to close this street the Locomotive Company paved portions of several nearby streets, notably that of North Jay.

Practically every building of importance that is still standing was built by Mr. John McDermott, a popular Schenectady contractor and builder, who is still doing constructing work for the company. The first building erected by Mr. McDermott was a blacksmith shop now used as a cylinder shop. It was erected in 1887. For many years all of the buildings were confined to a small acreage of land east of the Erie canal. In 1899 John McDermott built the new blacksmith shop, the first building to be erected on what was known as the "West Side." All of the prominent buildings on the west side were used to duplicate the work of the older buildings on the "East Side," the latter shops finally being used for other purposes. The work of finishing and assembling the locomotives is now carried on in the older portion of the works where are located the offices, storeroom, frame shop, cylinder shop, wheel shop, general machine shops, erecting shop and finishing shops. The rough material is made ready for finishing and assembling in the new part of the works, west of the canal, which consists of blacksmith shop, foundry, boiler shop, carpenter shop, forge shop, pattern shop, tank shop and drop forge shop.

The total acreage of the plant is now 61.75 acres, approximately two-fifths of which is covered by buildings.

#### EARLY METHODS OF LOCOMOTIVE CONSTRUCTION.

In the days of the Norrises and during the early career of the Ellises the locomotive boilers were filled with the aid of an old fire engine operated by from four to six Irishmen known as "Kangaroos." The "Kangaroos" were a gang of helpers to whom were allotted such tasks. The unskilled labor of the works now being done mostly by Italians was then performed by Irishmen. The term "Kangaroo" was said to have been suggested by the name of the ship which brought a great many of the sons of the Emerald Isle to this country. It seems that this particular delegation of old Erin's sons were imported from Limerick.

The "Kangaroos," by the methods then in vogue, consumed a half day in filling a boiler. The water was first drawn by an old wooden pump that stood over a well between the old erecting shop and the office. The engine used was an old style fire engine, named the "Neptune," which pumped the water through an inch and a half hose into the boilers located near the erecting floor. This method was improved upon and supplanted by a tank attached by strap hangers to trusses under the roof of the erecting shop. These tanks stored the rain water which was caught by the gutters at the eaves of the building. There is, however, some chance for discussion regarding what might have happened in case of a prolonged drought.



Passenger Engine built for the Harlem River R. R. in 1860.

Many of the first engines built at Scheneectady were for narrow gauge tracks, the gauge being in some cases as narrow as three feet eight inches. The tracks of the railroads in this vicinity were of the standard width, which fact necessitated the delivery of the engines by means of the flat car. The loading of the locomotives on the cars was no small task and here necessity again proved to be the mother of invention. An old elm tree, standing to the east of the turntable and roundhouse, served as an attachment for tackle blocks, and the engines were pulled up on skids. Once more the famous "Kangaroo" army was mustered into service in a veritable tug of war.

The matter of disposing of even small orders for locomotives was one of great significance in the early days. It is related that John Ellis delivered an order for two locomotives to a road said to be the "Hudson & Northern." Before he was paid for the engines the road was torn up, the two engines in question being left at the wrong end of the line. The writer has not been able to discover his method of regaining the "lost goods," but we can rest assured that the ingenuity of John Ellis did not fail him in this instance, and that he soon found a way to regain the lost property.

One morning, in 1860, Mr. Ellis went through his shops feeling highly elated, swinging his arms in the air, he exclaimed to his astonished employes, "Men! men! One year's work ahead of us—ten engines have been ordered by a western road!" A similar order now would run the plant but a very short time.

#### EFFECT OF THE CIVIL WAR.

In 1851 when the works was reorganized, five locomotives constituted the year's product. During the fifties the output was gradually increased until at the beginning of the Civil War the works boasted of producing one locomotive per month. Walter McQueen, chief engineer of the works, calculated that 2,500 days labor were required to produce the average engine. Thus it is evident that if one were built per month, there was about one hundred men employed. The war, however, wrought great changes. In 1862 the government practically took possession of the shops, confiscated all the locomotives on hand, and cancelled Ellis' contracts. It indemnified him against his orders, and paid him almost twice what he had formerly received for his engines. For a while no locomotives were built for any but government use. The output of the plant jumped from thirteen in '61 to twenty-nine in '62, and forty-one in '63. The number of employes were doubled during the war, and the output was usually two engines per month. It is said that by extra exertion, and with favorable circumstances, the immense total of three locomotives per month were turned out. Thus the war brought prosperity to Schenectady and especially to those engaged in locomotive building.

For years the product of the Schenectady works was

known far and wide as the McQueen engine. This engine was noted for its superior qualities generally, and on account of its excellent valve motion in particular. In the autumn of 1862 one of the McQueen engines steamed into Fairfax Court House, where the One Hundred and Thirty-fourth New York Infantry were stationed. The soldiers immediately recognized an old friend and literally leaped with joy as they swarmed around and greeted the majestic messenger from home.

#### THE SUCCESSORS OF JOHN ELLIS.

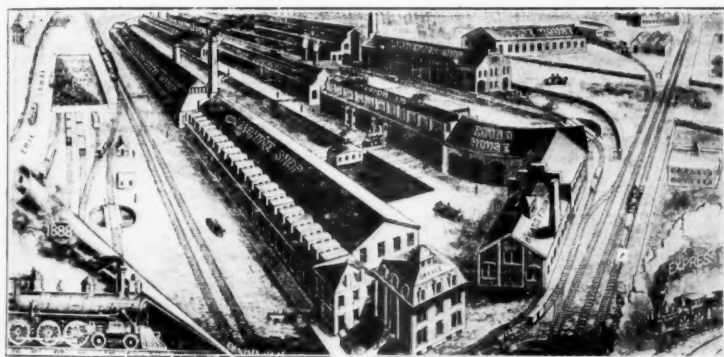
It was the wish of John Ellis not only to construct locomotives but build the cars behind them. He did succeed in building up an industry that rivaled the Baldwins, of Philadelphia, and the Rogers, of Paterson, but his death on October 4, 1864, prevented him from realizing his ideal of manufacturing cars, and left the locomotive industry in the hands of his four sons. The oldest son, John C. Ellis, succeeded his father as president and served in that capacity until June, 1878. It was during his regime that the capital stock was increased from \$60,000, the amount when reorganized in 1851. The stock was never increased again. All the improvements and additions, until the time of the merger, were paid for out of the accumulated earnings. John C. Ellis died in 1884, exactly twenty years to a day after the death of his father. Charles G. Ellis, the second brother, was made the head of the company, and served from 1878 until his death May 15, 1891. Edward Ellis, the third son, who had served as treasurer during the presidency of Charles, was the next to fill the presidential office. He retained the position until February 27, 1897, in which year he died, and was succeeded by the youngest brother, William D. Ellis. William D. Ellis was the last member of the Ellis family to hold an office in the company, and also holds the distinction of being the only living son of John Ellis.

Mr. William D. Ellis was born in Schenectady on August 15, 1856. He received a liberal education in American colleges, and in France and Switzerland added to his knowledge by travel and practical observations. He served as treasurer of the works from 1891 to 1901; was vice-president and treasurer from 1893 to 1897, and president and treasurer from 1897 to 1901. The

last-mentioned positions he most capably filled until the American Locomotive Company was formed. He was then relieved from official responsibility, having previously held office largely on account of family reasons.

### WALTER McQUEEN.

Walter McQueen was superintendent of the works from 1852 to 1876, and vice-president from 1876 until his death in June, 1893. Mr. McQueen was one of the best mechanics in the country. He understood every phase of the locomotive business, and was for years the strong right arm of John Ellis. His fame as a builder of locomotives had spread across the continent. So great was his reputation, that several enterprising citizens persuaded him to join them in forming a new locomotive company to be known as the McQueen Locomotive Works. Charles



View of the Schenectady Locomotive Works about 1888.

Stanford, then State Senator, was the chief promoter and stockholder of the new company. Eight acres of land were secured where the General Electric Company now stands, and in 1882 John McDermott built two large shops on the east side of Mill lane. Owing largely to the untimely death of Senator Stanford, the buildings were left unequipped and remained idle for several years. No locomotives were manufactured in them, and the property went into the hands of a receiver. About this time the

Edison Machine Works, of Garick street, New York, were having trouble with their employees, and, being dissatisfied generally with their conditions in New York, were looking for a new place to locate. Edward Ellis, who was the New York representative of his company, and who wished to see anything but locomotives manufactured in the McQueen shops, persuaded the Edison people to investigate conditions at Schenectady. Other locations were considered, but Schenectady offered the best inducements in the way of transportation facilities, and especially in the line of vacant buildings, where there was plenty of room for expansion. Business men and citizens of the city aided the new comers by contributing \$7,500 toward the price demanded for the McQueen shops. The Edison Machine Works began moving from New York in the summer of 1886, and were fully established at Schenectady on the eighteenth of December of the same year. The McQueen shops formed a nucleus around which have been built the General Electric Works. Thus has Walter McQueen been the indirect means of filling Schenectady with students of the "Science of Lightning," and made it famous as a city that "lights" as well as "hauls" the world.

Walter McQueen was succeeded as superintendent of the Locomotive Works by John Swift, in 1876. Mr. Swift retained the office until 1884, and was followed by Albert J. Pitkin. Mr. Pitkin came to the Schenectady Works in 1882 as mechanical engineer, having previously held important positions in the drawing rooms of the Baldwin and the Rhode Island Works. He proved himself a most worthy successor of McQueen and Swift. It has been large'y through his instrumentality that the Schenectady works have attained their great development in more recent years. In 1897 Mr. Pitkin was made vice-president and general manager. A. M. White becoming superintendent in his stead.

At the dawn of the twentieth century the "consolidation fever" struck the business world. The fever was no respecter of industries, and the locomotive industry became a victim. On June 24, 1901, the Schenectady Locomotive Works ceased to exist as an independent concern, and was merged with seven other locomotive plants into the American Locomotive Company. At the time of the consolidation William D. Ellis was president and treasurer, A. J. Pitkin, vice-president and general manager, A.

M. White, superintendent, J. E. Sague, mechanical engineer, William Dalton, construction engineer, and Alonzo P. Strong, secretary.

After the merger, Mr. William Ellis retired from active service in the company, Mr. Pitkin was made first vice-president of the combine, and Mr. White was succeeded by J. F. Deems, as general superintendent. Mr. Deems was followed by Mr. James McNaughton who for a time held the office of general superintendent of both the Schenectady and Brooks Works. Mr. McNaughton next acted as manager of the Schenectady plant until October 16, 1908, when he was made a vice-president of the American Locomotive Company. He was followed by the present manager, Mr. W. L. Reid. Mr. Reid, who had previously held the position of superintendent, was succeeded by Mr. E. B. Clark.

In connection with the above article on the Schenectady Locomotive Works, the following list of the first one hundred locomotives may be of interest.

- # 1 Buffalo, Corning & New York R. R., Nov. 1851, 16x22" 66"
- 2 Michigan Central R. R., Oct. 1851, 12½x20" 54"
- 3 Michigan Central R. R., Nov. 1851, 12½x20" 54"
- 4 Michigan Central R. R., Dec. 1851, 12½x20" 54"
- 5 Michigan Central R. R., Dec. 1851, 12½x20" 54"
- 6 Albany & Schenectady R. R., Jan. 1852, 16x22" 60"
- 7 Rochester & Syracuse R. R., Jan. 1852, 16x22" 60"
- 8 Utica & Schenectady R. R., Mar. 1852, 16x22" 78"
- 9 Utica & Schenectady R. R., Mar. 1852, 16x22" 78"
- 10 Hudson River R. R., Apr. 1852, 16x22" 60"
- 11 Milwaukee & Mississippi R. R., June 1852, 14x22" 60"
- 12 Hudson River R. R., June 1852, 16x22" 66"
- 13 Galena & Chicago Union R. R., July 1852, 12½x20" 54"
- 14 Cleveland Painesville & Ashtabula, July 1852, 16x22" 60"
- 15 Milwaukee & Mississippi R. R., Aug. 1852, 16x22" 60"
- 16 Albany & Northern R. R., Sep. 1852, 14x22" 66"
- 17 Albany & Northern R. R., Sep. 1852, 14x22" 66"
- 18 Cleveland Painesville & Ashtabula, Sep. 1852, 16x22" 60"
- 19 Utica & Schenectady R. R., Nov. 1852, 16x22" 60"
- 20 Galena & Chicago Union R. R., Nov. 1852, 16x22" 60"
- 21 New Albany & Salem R. R., Oct. 1852, 15x22" 60"
- 22 New Albany & Salem R. R., Oct. 1852, 15x22" 60"
- 23 Great Western R. R., Nov. 1852, 16x22" 72"
- 24 Great Western R. R., Nov. 1852, 16x22" 72"
- 25 Rochester & Syracuse R. R., Dec. 1852, 15x22" 66"
- 26 Rochester & Syracuse R. R., Dec. 1852, 15x22" 66"
- 27 Utica & Schenectady R. R., Jan. 1853, 14x22" 66"
- 28 Utica & Schenectady R. R., Jan. 1853, 14x22" 66"
- 29 Utica & Schenectady R. R., Feb. 1853, 15x22" 72"
- 30 Utica & Schenectady R. R., Feb. 1853, 15x22" 72"



- 31 Cleveland Painsville & Ashtabula, Feb. 1853, 16x22" 66"
- 32 Cleveland Painsville & Ashtabula, Feb. 1853, 16x22" 66"
- 33 Cleveland Painsville & Ashtabula, Mar. 1853, 16x22" 66"
- 34 Rochester & Syracuse R. R., Mar. 1853, 15x22" 66"
- 35 Albany & Schenectady R. R., Mar. 1853, 15x22" 54"
- 36 Schenectady & Troy R. R., Apr. 1853, 15x22" 54"
- 37 Buffalo & Rochester R. R., Apr. 1853, 15x22" 72"
- 38 No record.
- 39 Albany & Northern R. R., May 1853, 16x22" 72"
- 40 Albany & Northern R. R., May 1853, 16x22" 72"
- 41 Albany & Northern, June 1853, 16x22" 72"
- 42 Utica & Schenectady R. R., June 1853, 16x22" 78"
- 43 Utica & Schenectady R. R., June 1853, 16x22" 78"
- 44 Rochester & Syracuse R. R., July 1853, 15x22" 66"
- 45 Rochester & Syracuse R. R., July 1853, 15x22" 66"
- 46 Rochester & Syracuse R. R., Aug. 1853, 15x22" 66"
- 47 Rochester & Syracuse R. R., Aug. 1853, 15x22" 66"
- 48 Galena & Chicago Union R. R., July 1853,
- 49 Galena & Chicago Union R. R., Aug. 1853,
- 50 Galena & Chicago Union R. R., Aug. 1853,
- 51 Galena & Chicago Union R. R., Sep. 1853,
- 52 Buffalo Brantford & Goderich R. R., Sep. 1853,
- 53 Buffalo Brantford & Goderich R. R., Sep. 1853,
- 54 Great Western R. R., Oct. 1853,
- 55 Great Western R. R., Oct. 1853,
- 56 Utica & Schenectady R. R., Oct. 1853,
- 57 Utica & Schenectady R. R., Oct. 1853,
- 58 Great Western R. R., Nov. 1853,
- 59 Great Western R. R., Nov. 1853,
- 60 New York Central R. R., Nov. 1853,
- 61 New York Central R. R., Jan. 1854,
- 62 New York Central R. R., Nov. 1853,
- 63 New York Central R. R., Dec. 1853,
- 64 New York Central R. R., Dec. 1853,
- 65 Hudson River R. R., Dec. 1853,
- 66 Hudson River R. R., Jan. 1854,
- 67 Buffalo Brantford & Goderich, Jan. 1854,
- 68 New York Central R. R., Feb. 1854,
- 69 New York Central R. R., Feb. 1854,
- 70 New York Central R. R., Feb. 1854,
- 71 New York Central R. R., Feb. 1854,
- 72 New York Central R. R., Mar. 1854,
- 73 New York Central R. R., Mar. 1854,
- 74 Galena & Chicago Union R. R., Mar. 1854,
- 75 Galena & Chicago Union R. R., Mar. 1854,
- 76 Galena & Chicago Union R. R., Apr. 1854,
- 77 New York Central R. R., Apr. 1854, 16x22" 72"
- 78 New York Central R. R., Apr. 1854, 16x22" 72"
- 79 New York Central R. R., May 1854, 16x22" 72"
- 80 Galena & Chicago Union R. R., May 1854,
- 81 Galena & Chicago Union P. R., May 1854,
- 82 Great Western R. R., May 1854,
- 83 Great Western R. R., June 1854,
- 84 New York Central R. R., May 1854, 16x22" 72"
- 85 New York Central R. R., June 1854, 16x22" 72"
- 86 Buffalo Brantford & Goderich, June 1854,
- 87 Buffalo Brantford & Goderich, June 1854,
- 88 New York Central R. R., July 1854, 14x22" 66"
- 89 Galena & Chicago Union R. R., Aug. 1854,
- 90 No record



- 91 No record
- 92 Northern Cross R. R., May 1855,
- 93 Milwaukee & Mississippi R. R., Aug. 1854, 15x22" 54"
- 94 Milwaukee & Mississippi R. R., Aug. 1854, 15x22" 54"
- 95 New York Central R. R., #56, Aug. 1854, 16x22" 72"
- 96 New York Central R. R., #57, Sep. 1854, 15x22" 60"
- 97 No record
- 98 New York Central, #58, Sep. 1854,
- 99 No record
- 100 Galena & Chicago Union R. R., Mar. 1855, 17x22"
- 101 Galena & Chicago Union R. R., Mar. 1855, 17x22"
- 102 New York Central R. R., #59, Nov. 1854,
- 103 New York Central R. R., #60, Nov. 1854,
- 104 Buffalo & Erie R. R., Mar. 1855,